

Patent
43521-2600

IN THE CLAIMS:

1. (Currently Amended) An electron optical lens column characterized by comprising a column unit and an electrostatic lens disposed inside of said column unit and ~~by the fact that the~~ an inner surface of said column unit is given having a high-resistance electrical
5 conductivity, that said column unit has an inner column and an outer column, said inner column is disposed on an inside of said outer column, and said electrostatic lens comprises electrodes used to produce an electric field within said column unit, said electrodes are connected to electrical interconnections for apply voltages to said electrodes, and said interconnections are disposed between said inner column and said outer column.
- 10 2. (Currently Amended) The electron optical lens column according to Claim 1, characterized ~~by the fact that~~ in the inner surface of said column unit is formed from a ceramic having high-resistance electrical conductivity.
3. (Currently Amended) The electron optical lens column according to Claim 1, characterized ~~by the fact~~ in that said column unit is formed from, essentially, a single material.
- 15 4. (Currently Amended) The electron optical lens column according to Claim 3, characterized ~~by the fact~~ in that said single material is a ceramic that has high-resistance electrical conductivity.
5. (Currently Amended) The electron optical lens column according to Claim 1, characterized ~~by the fact that~~ said high-resistance electrical conductivity ~~is in such a state that the~~
20 has a resistivity is in the range of 10^8 to 10^{10} Ω -cm.
- 6-7. (Cancelled)

43521.2600PRICENRV478185

Patent
43521-2600

8. (Currently Amended) The electron optical lens column according to Claim ~~[[7]]~~ 1 comprises a plurality of said electrodes and is further characterized by ~~the fact that~~ said electrodes with identical electric potentials are being mutually connected via said electrical interconnections.

5 9. (Currently Amended) The electron optical lens column according to Claim ~~[[7]]~~ 1 comprises a plurality of said electrodes and is further characterized by ~~the fact that~~ said electrical interconnections connect together via one of resistances ~~[[or]]~~ and switching element~~[[s]]~~ electrodes that have different electric potentials.

10 10. (Currently Amended) The electron optical lens column according to Claim 1, characterized by ~~the fact that~~ said electrostatic lens ~~comprises~~ comprising electrodes for generating electric fields on the inside of said column unit, and that said electrodes are attached to the inner surface of said column unit.

11. (Currently Amended) The electron optical lens column according to Claim 1 further comprises a plurality of said electrostatic lenses, and is further characterized by ~~the fact~~ ~~that the~~ electrodes equipped for each electrostatic lens comprise multiple electrode parts that are mutually separate, and that the number of electrode parts in each of said electrodes is identical.

12. (Currently Amended) The electron optical lens column according to Claim 1 further comprises a plurality of said electrostatic lenses, and is further characterized by ~~the fact~~ that each of said electrostatic lenses comprises electrodes, that said electrodes comprise multiple electrode parts that are mutually separate, and that those electrode parts that have identical electric potentials are connected together electrically via common electrical interconnections.

43521.2600PRICE/IRVW78183

Patent
43521-2600

13. (Currently Amended) ~~The electron optical lens column according to Claim 1,~~
~~characterized by the fact that~~ An electron optical lens column characterized by comprising a
column unit and an electrostatic lens disposed inside of said column unit and an inner surface of
said column unit is given high-resistance electrical conductivity, said column unit has an inner
5 column and an outer column, ~~that~~ said inner column is disposed inside said outer column, ~~that~~
said column unit comprises a plurality of said electrostatic lenses, ~~that~~ said electrostatic lenses
comprise electrodes for generating electric fields on the inside of said column unit, ~~that~~ said
electrodes are attached to the inner surface of said column unit, ~~that~~ said electrodes are equipped
with a plurality of electrode parts that are mutually separate, ~~that~~ said electrode parts that have
10 identical electric potentials are mutually connected electrically via interconnections, and ~~that~~ said
electrical interconnections are disposed between said inner column and said outer column, the
high-resistance electrical conductivity is within a range of 10^8 to 10^{10} Ω -cm.

14. (Currently Amended) ~~The electron optical lens column according to Claim 1,~~
~~characterized by the fact that~~ An electron optical lens column characterized by comprising a
15 column unit and an electrostatic lens disposed inside of said column unit and an inner surface of
said column unit is given high resistance electrical conductivity, said column unit has an inner
column and an outer column, ~~that~~ said inner column is disposed inside said outer column, ~~that~~
said column unit comprises a plurality of said electrostatic lenses, ~~that~~ said electrostatic lenses
comprise electrodes for generating electric fields on the inside of said column unit, ~~that~~ said
20 electrodes are attached to the inner surface of said column unit, ~~that~~ said electrodes are equipped
with a plurality of electrode parts that are mutually separate, ~~that~~ said electrode parts are
connected together via interconnections and resistances in order to apply differing voltages to

Patent
43521-2600

these electrode parts, and that said interconnections and resistances are disposed between said inner column and said outer column.

15. (Currently Amended) ~~The electron optical lens column according to Claim 1,~~
~~characterized by the fact that~~ An electron optical lens column characterized by comprising a
5 column unit and an electrostatic lens disposed inside of said column unit and an inner surface of
said column unit is given high residence electrical conductivity, said column unit comprises a
plurality of said electrostatic lenses, that said electrostatic lenses comprise electrodes for
generating electric fields on the inside of said column unit, ~~that~~ said electrodes are attached to the
inner surface of said column unit, that said electrodes are equipped with a plurality of electrode
10 parts that are mutually separate, ~~that~~ said electrode parts are connected together via
interconnections and switching elements in order to apply differing voltages to these electrode
parts, and ~~that~~ said interconnections and switching elements are disposed between said inner
column and said outer column.

16. (Currently Amended) The electron optical lens column according to Claim 1,
15 comprising a plurality of said electrostatic lenses, and further characterized by ~~the fact that~~
grooves are formed between said electrostatic lenses.

17. (Currently Amended) The electron optical lens column according to Claim 1,
characterized by ~~the fact that~~ said electrostatic lens comprises a plurality of electrodes, and that
grooves are formed between said electrodes.

Patent
43521-2600

18. (Currently Amended) The electron optical lens column according to Claim 1, characterized by ~~the fact that~~ said electrostatic lens comprises an electrode, that said electrode comprises multiple electrode parts, and that grooves are formed between said electrode parts.

19. (Currently Amended) The electron optical lens column according to Claim 1,
5 characterized by ~~the fact that~~ an electron gun chamber is provided at one end of said column unit.

20. (Currently Amended) The electron optical lens column according to Claim ~~[[1]]~~
19, characterized by ~~the fact that~~ a secondary electron detector is provided on ~~[[the]]~~ another
~~other~~ end of said column unit.

21. (Currently Amended) The electron optical lens column according to Claim 1,
10 characterized by ~~the fact that~~ a flange for attaching an electron gun chamber is provided on one
end of said column unit, and integrated with said column unit.

22. (Currently Amended) The electron optical lens column according to Claim ~~[[1]]~~
21, characterized by ~~the fact that a column part, structuring the~~ a sidewall of an electron gun
chamber on one end of said column unit is provided integrated with said column unit.

23. (Previously Presented) A scanning electron microscope comprising a lens column
15 according to Claim 1.

24. (Previously Presented) An ion beam device comprising a lens column according
to Claim 1.

Patent
43521-2600

25. (Currently Amended) A manufacturing method for an electron optical lens column comprising the following steps:

(1) a step that coats an electrically conductive material on the inner surface of a column unit, and

5 (2) a step that obtains forms one set of electrodes for structuring an electrostatic lens through ~~the~~ a removal of a portion of the aforementioned electrically conductive material that has been coated on the inner surface of the column unit.

26. (Currently Amended) A manufacturing method for an electron optical lens column comprising a step that obtains provides one set of electrodes for forming an electrostatic
10 lens through coating an electrically conductive material in a specific pattern on ~~the~~ an inner surface of a column unit.

27. (Currently Amended) A manufacturing method for an electron optical lens column comprising the following steps:

(1) a step that coats an electrically conductive material on ~~[[the]]~~ an inner
15 surface of a column unit,

(2) a step that obtains multiple electrodes for structuring one or more electrostatic lenses through ~~[[the]]~~ a removal of a portion of the aforementioned electrically conductive material that has been coated, and.

(3) a step that connects, via interconnections, those aforementioned multiple
20 electrodes that have identical electric potentials.

Patent
43521-2600

28. (Currently Amended) A manufacturing method for an electron optical lens column comprising the following steps:

(1) a step that coats an electrically conductive material on ~~[[the]]~~ an inner surface of a column unit,

5 (2) a step that obtains multiple electrode parts for structuring electrodes for electrostatic lenses through removing a portion of the aforementioned electrically conductive material that has been coated, and

(3) a step that connects, via interconnections, those aforementioned multiple electrode parts that have identical electric potentials.

10 29. (Currently Amended) A manufacturing method for an electron optical lens column comprising the following steps:

(1) a step that arranges interconnections on ~~[[the]]~~ an outer surface of an inner column unit,

15 (2) a step that forms, in an inner column, either before or after the aforementioned step (1), through holes for connecting the aforementioned interconnections with electrodes that are disposed on the inner surface of said inner column,

(3) a step that fits an outer column onto the outside of said inner column, and

20 (4) a step that forms, in said outer column, either before or after the aforementioned step (3), through holes for connecting the aforementioned interconnections with outside circuitry on the aforementioned outer column.

30. (Cancelled)

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER: _____**

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.